

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) ~~[[An]]~~ A fully implantable pressure sensing device, comprising:  
a housing configured for implantation within a body of a patient, and a pressure sensor disposed within the housing;  
a polyurethane pressure transmission catheter that defines a lumen extending therethrough, the polyurethane pressure transmission catheter having a proximal portion, a mid portion, a distal portion, and a distal port at a distal longitudinal end of the distal portion, and a lumen extending therethrough, the proximal portion of the catheter connected to the housing, and the lumen in fluid communication with the pressure sensor;  
a pressure transmission fluid disposed in the lumen;  
a barrier disposed proximate the distal port to retain the fluid in the lumen, wherein pressure is referred from a target site within the body of the patient to the pressure sensor through the barrier and via the pressure transmission fluid; and  
a surface modification on an outside surface of the distal portion of the catheter, [[wherein]] the surface modification configured to promote promotes tissue in-growth at a blood interface, wherein the surface modification comprises a layer of material comprising a tube that does not cover the port, wherein the tube is bonded to an external surface of the distal portion of the catheter by an adhesive that provides a transition from the surface modification tube to the external surface of the distal portion of the polyurethane catheter to reduce thrombus formation at the interface.
2. (Original) An implantable pressure sensing device as in claim 1, wherein the pressure sensor is connected to a telemetry unit.

3. (Previously Presented) An implantable pressure sensing device as in claim 36, wherein the distal portion of the catheter is flared to define the larger inside diameter.

4. (Previously Presented) An implantable pressure sensing device as in claim 36, wherein the distal portion of the catheter is counter-bored to define the larger inside diameter.

5. (Canceled)

6. (Canceled)

7. (Previously Presented) An implantable pressure sensing device as in claim 1, wherein the surface modification prevents migration of infectious contaminants.

8. (Previously Presented) An implantable pressure sensing device as in claim 1, wherein the surface modification improves a seal between the catheter and surrounding tissue.

9. (Previously Presented) An implantable pressure sensing device as in claim 1, wherein the surface modification improves anchoring between the catheter and surrounding tissue.

10. (Canceled)

11. (Canceled)

12. (Currently Amended) An implantable pressure sensing device as in claim 1 [[11]], wherein the tube has a proximal end and a distal end, and wherein the tube is ~~connected~~ bonded to the catheter at ~~only one of the proximal and its distal ends~~.

13. (Original) An implantable pressure sensing device as in claim 1, wherein the barrier comprises a gel, and wherein the gel is recessed back from the distal port.

14. (Original) An implantable pressure sensing device as in claim 1, wherein the barrier comprises a membrane extending over the distal port.

15. (Currently Amended) An implantable pressure sensing device as in claim 1, wherein the ~~distal~~ port is distal-facing.

16. (Currently Amended) An implantable pressure sensing device as in claim 1, wherein the ~~distal~~ port is side-facing.

17. (Original) An implantable pressure sensing device as in claim 1, further comprising a dissolvable material disposed in the distal port.

18. (Original) An implantable pressure sensing device as in claim 1, further comprising a fill hole in a side wall of the catheter.

19. (Original) An implantable pressure sensing device as in claim 1, further comprising a pair of protrusions extending from a side of the catheter to grasp tissue therebetween.

20. (Original) An implantable pressure sensing device as in claim 1, wherein at least a portion of the catheter is in the shape of a helix.

21. (Original) An implantable pressure sensing device as in claim 1, wherein the lumen has a non-circular geometry.

22. (Canceled)

23. (Canceled)

24. (Currently Amended) An implantable pressure sensing device, comprising:  
a pressure sensor configured to be implanted in a body of a patient; and

a pressure transmission catheter having an open proximal end, a closed distal end, and a liquid-filled lumen extending therethrough, the proximal end of the catheter connected to the pressure sensor, wherein the catheter comprises a tube, and wherein a surface of the tube defines the lumen and encloses the distal end of the catheter. ~~and wherein the distal end of the catheter is closed by an integral extension of the tube.~~

25. (Canceled)

26. (Currently Amended) An implantable pressure sensing device as in claim 1, comprising:

a pressure sensor;

~~a pressure transmission catheter having a proximal end, a distal end, and a fluid filled lumen extending therethrough, the proximal end of the catheter connected to the pressure sensor, wherein at least a distal portion of the catheter includes a modification to the outer surface of the catheter including a layer of material that~~ wherein the surface modification layer of material comprises ePTFE to at least one of, at [[a]] the blood interface site, promote tissue in-growth, prevent migration of infectious contaminants, improve a seal between the catheter and surrounding tissue, improve anchoring between the catheter and surrounding tissue, and improve endothelialization.

27. (Canceled)

28. (Canceled)

29. (Currently Amended) An implantable pressure sensing device as in claim 1, comprising:

a pressure sensor;

~~a pressure transmission catheter having a proximal end, a distal end, and a fluid filled lumen extending therethrough, the proximal end of the catheter connected to the pressure sensor, wherein at least a distal portion of the catheter includes a modification to the outer~~

~~surface of the catheter including an outer layer of material that~~ wherein the surface modification layer of material comprises polyester fabric to at least one of, at ~~[[a]]~~ the blood interface site, ~~promote tissue in growth,~~ prevent migration of infectious contaminants, improve a seal between the catheter and surrounding tissue, improve anchoring between the catheter and surrounding tissue, and improve endothelialization.

30. (Canceled)

31. (Canceled)

32. (Currently Amended) An implantable pressure sensing device, comprising:  
a pressure sensor;  
a pressure transmission catheter having a proximal portion, a distal portion, a distal port, and a lumen extending therethrough, the proximal portion of the catheter connected to the pressure sensor;  
a pressure transmission fluid disposed in the lumen; and  
a barrier disposed proximate the distal port to retain the fluid in the lumen;  
wherein the pressure transmission catheter containing the pressure transmission fluid and barrier collectively act as a low-pass filter with a half power point of approximately ~~for frequencies above~~ 10 Hz.

33. (Currently Amended) An implantable pressure sensing device as in claim 32, wherein the pressure transmission catheter containing the pressure transmission fluid and barrier collectively act as a low-pass filter with a half power point of approximately ~~for frequencies above~~ 5 Hz.

34. (Currently Amended) An implantable pressure sensing device as in claim 33, wherein the pressure transmission catheter containing the pressure transmission fluid and barrier collectively act as a low-pass filter with a half power point of approximately ~~for frequencies above~~ 1 Hz.

35. (Withdrawn) A method of implanting a pressure sensor assembly, comprising:

- providing a sensor assembly, the sensor assembly comprising a housing, a pressure sensor in the housing, and a pressure transmission catheter extending from the housing;
- providing a trocar;
- providing an introducer having a peelable sheath;
- providing a retainer having a proximal handle and a distal plate with a slot therein;
- positioning the trocar in the introducer;
- penetrating bodily tissue with the trocar and introducer such that a distal end of the trocar and introducer reside in a body cavity where pressure is to be measured;
- removing the trocar from the introducer;
- inserting the pressure transmission catheter into the introducer until a distal end of the pressure transmission catheter resides in the body cavity;
- positioning the retainer such that the distal plate rests against the bodily tissue and the introducer resides in the slot; and
- removing the introducer by peeling the sheath around the pressure sensor assembly while leaving the pressure transmission catheter in place.

36. (Previously Presented) An implantable pressure sensing device as in claim 1, wherein the distal portion of the catheter has an inside diameter that is larger than an inside diameter of the mid portion of the catheter.

37. (Currently Amended) An implantable pressure sensing device as in claim 1, comprising:

- ~~a pressure sensor;~~
- ~~a pressure transmission catheter having a proximal portion, a mid portion, a distal portion, a distal port, and a lumen extending therethrough, the proximal portion of the catheter connected to the pressure sensor;~~
- ~~a pressure transmission fluid disposed in the lumen;~~

~~a barrier disposed proximate the distal port to retain the fluid in the lumen; and~~  
~~a surface modification on an outside surface of a distal portion of the catheter,~~  
wherein the surface modification improves a seal, at ~~[[a]]~~ the blood interface, between the catheter and surrounding tissue.

38. (Previously Presented) An implantable pressure sensing device, comprising:

- a pressure sensor;
- a pressure transmission catheter having a proximal portion, a mid portion, a distal portion, a distal port, and a lumen extending therethrough, the proximal portion of the catheter connected to the pressure sensor;
- a pressure transmission fluid disposed in the lumen;
- a barrier disposed proximate the distal port to retain the fluid in the lumen; and
- a pair of protrusions extending from a side of the catheter to grasp tissue therebetween.

39. (Canceled)

40. (Withdrawn) A method of producing an implantable pressure sensing device, comprising:

- determining an appropriate low-pass filter half-power frequency for a pressure measurement application; and
- providing a pressure transmission catheter having a lumen extending therethrough, with a pressure transmission fluid disposed in the lumen and a gel barrier disposed proximate a distal port of the catheter to retain the fluid in the lumen; wherein at least one of an elastic modulus of a polymer used to make the catheter, a length of the gel barrier, a diameter of the lumen, and a viscosity of the fluid is selected to achieve the low-pass filter half-power frequency for the device.

41. (New) An implantable pressure sensing device as in claim 24, wherein the surface of the tube has a first thickness over the portion of the tube that defines the lumen, and a second

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thickness, less than the first thickness, over the portion of the tube that encloses the distal end of the catheter.